

**REMARKS**

Claims 16-28 are currently pending in the application. By this amendment, claims 16, 20 and 24-26 are amended and claims 27 and 28 are added for the Examiner's consideration. The above amendments do not add new matter to the application and are fully supported by the specification. For example, support for the amendment to claims 16 and 24 and for new claims 27 and 28 is found at paragraph 0049 of the specification. Reconsideration of the rejected claims in view of the above amendments and the following remarks is respectfully requested.

***Present Amendment is proper for entry***

Applicants respectfully submit that the instant amendment is proper for entry after final rejection. Applicants note that no question of new matter is presented nor are any new issues raised in entering the instant amendment of the claims and that no new search would be required. Moreover, Applicants submit that the instant amendment places the application in condition for allowance, or at least in better form for appeal. Accordingly, Applicants request the Examiner to enter the instant amendment, consider the merits of the same, and indicate the allowability of the present application and each of the pending claims.

***Claim Objection***

Claims 24-26 were objected to on the basis of minor asserted informalities.

Applicants submit that each basis of objection has been addressed by the instant amendment of the claims and has therefore been rendered moot.

With regard to claim 24, Applicants have adopted the Examiner's suggestions with regard to the atoms having first and second energies, with regard to the "depth in" feature, and with regard to clarifying that the middle region is tailored for an implant profile. However, Applicants respectfully disagree that the claims are required to include language establishing a relationship between the recited dopants and the

recited atoms. Applicants note, in particular, that the Examiner has failed to identify any requirement in current USPTO rules requiring such language.

With regard to claim 25, Applicants have essentially adopted the Examiner's suggestion with regard to specifying that it is a single dopant type.

Accordingly, Applicants respectfully request that the instant objection be withdrawn.

### ***35 U.S.C. §102 Rejections***

#### **Over AAPA**

Claims 16-23 were rejected under 35 U.S.C. §102(b) for being anticipated by Applicant's Admitted Prior Art (AAPA). This rejection is respectfully traversed.

In order to establish a *prima facie* case of anticipation under 35 U.S.C. § 102, a single prior art reference must disclose each and every element as set forth in the subject claim. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). Applicants respectfully submit that a *prima facie* case of anticipation has not been established as the applied reference fails to teach each and every element of the claims.

More particularly, claim 16 recites, *inter alia*,

doping a lower region of the semiconductor substrate with a first dopant at a first energy level;

doping a middle region of the semiconductor substrate with a second dopant at a second energy level lower than the first energy level; and

doping an upper region of the semiconductor substrate with a third dopant at a third energy level lower than the second energy level.

The Examiner is of the opinion that the features of the claimed invention are disclosed in Fig. 1 and the discussion thereof in the instant specification. Applicants respectfully disagree and submit that the features of claim 16, as now amended, are clearly not shown in Fig. 1 of the instant application.

In addition to the reasons already made of record, Applicants submit that AAPA does not disclose, or even suggest, the three recited doping steps, much less, that each of the three doping steps has less energy than the previous doping step. Nor has the Examiner shown otherwise. Applicants note, in particular, that the language in the instant specification describing Fig. 1 explains that the subcollector 14 is doped with a 40 KeV energy level, that the collector 16 is doped with a 700 KeV energy level, and that the HA junction 24 is doped with a 40 KeV energy level. Such language is clearly not suggestive of the three doping steps having approximately less energy than the previous doping step.

Furthermore, the rejection of claims 17-23 is improper at least because these claims depend from claim 16, which is believed to be allowable over the applied art of record.

Accordingly, Applicants respectfully request that the rejection over claims 16-23 be withdrawn.

Over Kajimura

Claims 16-20 were rejected under 35 U.S.C. §102(b) for being anticipated by JP 04-062977 to KAJIMURA. This rejection is respectfully traversed.

Again, in order to establish a *prima facie* case of anticipation under 35 U.S.C. § 102, a single prior art reference must disclose each and every element as set forth in the subject claim. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). Applicants respectfully submit that a *prima facie* case of anticipation has not been established as the applied reference fails to teach each and every element of the claims.

As explained above, claim 16 recites, *inter alia*,

doping a lower region of the semiconductor substrate with a first dopant at a first energy level;  
doping a middle region of the semiconductor substrate with a second dopant at a second energy level lower than the first energy level; and

doping an upper region of the semiconductor substrate with a third dopant at a third energy level lower than the second energy level.

The Examiner is of the opinion that the features of the claimed invention are disclosed KAJIMURA. Applicants respectfully disagree and submit that the features of claim 16, as now amended, are clearly not disclosed in KAJIMURA.

In addition to the reasons already made of record, Applicants submit that KAJIMURA does not disclose, or even suggest, the three recited doping steps, much less, that each of the three doping steps has approximately less energy than the previous doping step. Nor has the Examiner shown otherwise. Applicants note, in particular, that the Abstract of KAJIMURA does not disclose any energy levels and the Examiner has not identified any language in KAJIMURA which discloses these features.

Furthermore, the rejection of claims 17-20 is improper at least because these claims depend from claim 16, which is believed to be allowable over the applied art of record.

Accordingly, Applicants respectfully request that the rejection over claims 16-20 be withdrawn.

Over Igarashi

Claims 24-26 were rejected under 35 U.S.C. §102(b) for being anticipated by JP 04343479 to IGARASHI. This rejection is respectfully traversed.

Again, in order to establish a *prima facie* case of anticipation under 35 U.S.C. § 102, a single prior art reference must disclose each and every element as set forth in the subject claim. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). Applicants respectfully submit that a *prima facie* case of anticipation has not been established as the applied reference fails to teach each and every element of the claims.

In particular, claim 24 recites, *inter alia*, that the doping of the middle region has approximately less energy than the doping of the lower region and that the doping of the upper region has approximately less energy than the doping of the middle region.

The Examiner is of the opinion that the features of the claimed invention are disclosed in IGARASHI. Applicants respectfully disagree and submit that the features of claim 24, as now amended, are clearly not disclosed in IGARASHI.

Applicants submit that IGARASHI does not disclose, or even suggest, the three recited doping steps, much less, that each of the three doping steps has approximately less energy than the previous doping step. Nor has the Examiner shown otherwise. Applicants note, in particular, that the Abstract of IGARASHI does not disclose any energy levels and the Examiner has not identified any language in IGARASHI which discloses these features.

Furthermore, the rejection of claims 25 and 26 is improper at least because these claims depend from claim 24, which is believed to be allowable over the applied art of record.

Accordingly, Applicants respectfully request that the rejection over claims 24-26 be withdrawn.

### **35 U.S.C. §103 Rejection**

Claims 21-23 were rejected under 35 U.S.C. §103(a) for being unpatentable over KAJIMURA alone. This rejection is respectfully traversed.

The Examiner is of the opinion that the features of claims 21-23 are obvious in view of KAJIMURA because the recited features are asserted to be conventional. Applicants respectfully disagree with the Examiner, and request that the Examiner provide a reference which shows the additional features not disclosed in KAJIMURA. In fact, Applicants submit that the recited features in combination with those recited in

claim 16 render each of these claims allowable and the Examiner has not shown otherwise.

Also, Applicants submit that the features of KAJIMURA do not even show the independently claimed invention recited in claim 16. As such, it is Applicants' opinion that the features of the dependent claims 21-23 would not be obvious. For example, since KAJIMURA does not disclose that each of the three doping steps has approximately less energy than the previous doping step, claims 21-23 would not be obvious because they too recite this feature. Also, as admitted by the Examiner, the KAJIMURA reference does not show the features of any of claims 21-23.

Applicants also direct the Examiner's attention to the guidelines identified in M.P.E.P section 2141 which state that

"[i]n determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification. *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972)."

As this section also clearly indicates,

"obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

Moreover, it has been legally established that

"[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) .... Although a prior art

device may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so. 916 F.2d at 682, 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references)."

Additionally, it has been held that

"[a] statement that modifications of the prior art to meet the claimed invention would have been well within the ordinary skill of the art at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

Applicants submit that there is no motivation to modify KAJIMURA in view of what is asserted to be known in the art in a manner which would render obvious Applicants' invention, and additionally, Applicants submit that there is no motivation or rationale disclosed or suggested in KAJIMURA to modify KAJIMURA in the manner suggested by the Examiner. The Examiner's opinion does not provide a proper basis for these features or for the motivation to modify or combine these documents in the manner suggested by the Examiner. This is based, in part, on the fact that all of the features of the claimed invention are not even shown in the KAJIMURA reference. Therefore, Applicant submits that the invention as recited in at least independent claim 16 is not rendered obvious by any reasonable inspection and interpretation of the disclosure of the KAJIMURA reference in view of those of ordinary skill in the art.

Accordingly, Applicants respectfully request that the rejection over claims 21-23 be withdrawn.

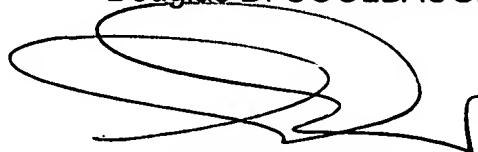
***New Claims Are Also Allowable***

Applicants submit that new claims 27 and 28 are allowable because they depend from claim 16 which is believed to be allowable.

**CONCLUSION**

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicants hereby make a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Deposit Account No. 09-0456.

Respectfully submitted,  
Douglas D. COOLBAUGH et al.

A handwritten signature in black ink, appearing to read "Andrew M. Calderon". It is written in a cursive style with a large, stylized initial 'A'.

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